

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P921143

Luminaire Tested: DFN2DIP-TR4F0-100D080US935-FLONL

Issue Date: 11/21/2024

**Test Information**

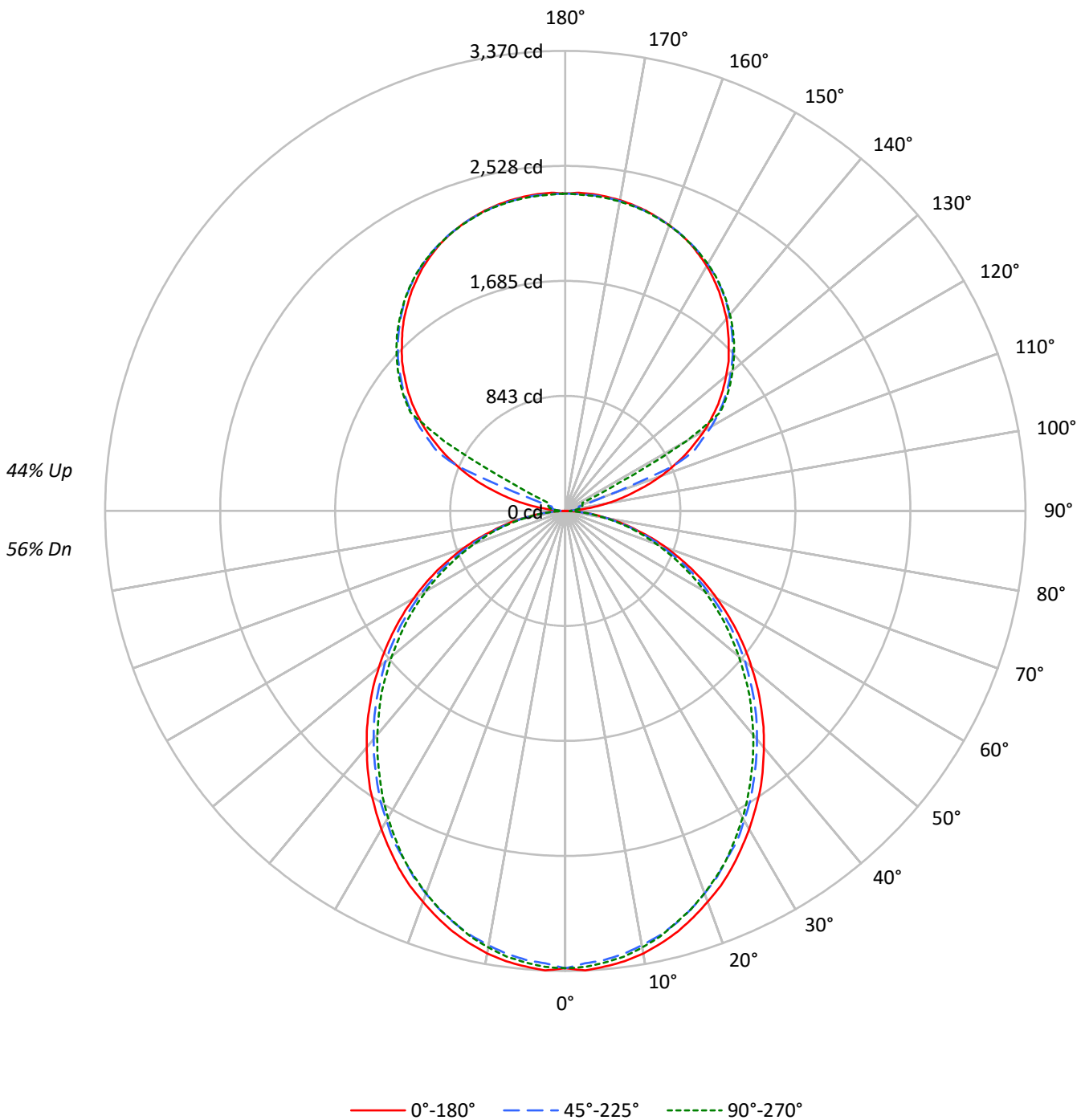
Test Method: LM-79-2019  
Report Number: P921143  
REPORT IS A COMBINATION OF REPORTS P901973 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-100D080US935-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15343.0 lumens  
Efficiency: N/A  
Efficacy: 95.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 160.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P921143  
CATALOG NUMBER: DFN2DIP-TR4F0-100D080US935-FLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P921143  
 CATALOG NUMBER: DFN2DIP-TR4F0-100D080US935-FLLONL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    |    |
| RC  | 80  |     |     |     | 70  |     |     |     | 50 |    |    |    | 30 |    |    |    | 10 |    |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0  |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 108 | 108 | 108 | 108 | 101 | 101 | 101 | 101 | 86 | 86 | 86 | 73 | 73 | 73 | 61 | 61 | 61 | 56 |    |    | 56 |
| 1   | 99  | 95  | 91  | 87  | 92  | 88  | 85  | 82  | 76 | 73 | 71 | 65 | 63 | 61 | 54 | 53 | 52 | 47 |    |    | 47 |
| 2   | 90  | 83  | 76  | 71  | 84  | 77  | 72  | 67  | 66 | 62 | 59 | 57 | 54 | 51 | 48 | 46 | 44 | 39 |    |    | 39 |
| 3   | 82  | 73  | 65  | 59  | 76  | 68  | 61  | 56  | 59 | 54 | 50 | 50 | 46 | 43 | 42 | 39 | 37 | 33 |    |    | 33 |
| 4   | 75  | 64  | 56  | 50  | 70  | 60  | 53  | 48  | 52 | 47 | 42 | 45 | 40 | 37 | 38 | 35 | 32 | 29 |    |    | 29 |
| 5   | 69  | 57  | 49  | 43  | 64  | 54  | 46  | 41  | 47 | 41 | 36 | 40 | 36 | 32 | 34 | 31 | 28 | 25 |    |    | 25 |
| 6   | 64  | 52  | 43  | 37  | 59  | 48  | 41  | 36  | 42 | 36 | 32 | 36 | 32 | 28 | 31 | 27 | 25 | 22 |    |    | 22 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 36  | 31  | 38 | 32 | 28 | 33 | 28 | 25 | 28 | 25 | 22 | 19 |    |    | 19 |
| 8   | 55  | 42  | 34  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 30 | 26 | 22 | 26 | 22 | 20 | 17 |    |    | 17 |
| 9   | 51  | 39  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 26 | 22 | 28 | 23 | 20 | 24 | 20 | 18 | 16 |    |    | 16 |
| 10  | 48  | 35  | 28  | 23  | 44  | 33  | 27  | 22  | 29 | 24 | 20 | 26 | 21 | 18 | 22 | 19 | 16 | 14 |    |    | 14 |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2662 | 2662 | 2662 |
| 5°  | 2666 | 2624 | 2642 |
| 10° | 2644 | 2589 | 2606 |
| 15° | 2605 | 2546 | 2550 |
| 20° | 2553 | 2487 | 2493 |
| 25° | 2501 | 2416 | 2427 |
| 30° | 2435 | 2350 | 2342 |
| 35° | 2373 | 2273 | 2253 |
| 40° | 2297 | 2194 | 2169 |
| 45° | 2221 | 2115 | 2082 |
| 50° | 2137 | 2033 | 1982 |
| 55° | 2050 | 1937 | 1889 |
| 60° | 1951 | 1824 | 1783 |
| 65° | 1844 | 1706 | 1658 |
| 70° | 1707 | 1563 | 1524 |
| 75° | 1518 | 1391 | 1400 |
| 80° | 1290 | 1173 | 1163 |
| 85° | 933  | 796  | 771  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2221 cd/sqm



TEST NUMBER: P921143

CATALOG NUMBER: DFN2DIP-TR4F0-100D080US935-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 315.3   | 2.1       |
| 10°-20°   | 887.2   | 5.8       |
| 20°-30°   | 1303.8  | 8.5       |
| 30°-40°   | 1514.3  | 9.9       |
| 40°-50°   | 1512.4  | 9.9       |
| 50°-60°   | 1318.8  | 8.6       |
| 60°-70°   | 974.9   | 6.4       |
| 70°-80°   | 551.6   | 3.6       |
| 80°-90°   | 149.7   | 1.0       |
| 90°-100°  | 76.7    | 0.5       |
| 100°-110° | 285.7   | 1.9       |
| 110°-120° | 757.9   | 4.9       |
| 120°-130° | 1256.9  | 8.2       |
| 130°-140° | 1335.2  | 8.7       |
| 140°-150° | 1240.9  | 8.1       |
| 150°-160° | 997.6   | 6.5       |
| 160°-170° | 642.8   | 4.2       |
| 170°-180° | 221.3   | 1.4       |
| 0°-30°    | 2506.3  | 16.3      |
| 0°-40°    | 4020.6  | 26.2      |
| 0°-60°    | 6851.8  | 44.7      |
| 0°-90°    | 8528.0  | 55.6      |
| 90°-120°  | 1120.2  | 7.3       |
| 90°-150°  | 4953.3  | 32.3      |
| 90°-180°  | 6815.0  | 44.4      |
| 0°-180°   | 15343.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3350 | 3350  | 3350 | 3350  | 3350 |      |
| 5°   | 3350 | 3338  | 3302 | 3328  | 3322 | 318  |
| 15°  | 3189 | 3170  | 3128 | 3141  | 3125 | 898  |
| 25°  | 2886 | 2861  | 2806 | 2812  | 2806 | 1328 |
| 35°  | 2490 | 2458  | 2406 | 2387  | 2371 | 1555 |
| 45°  | 2026 | 2004  | 1955 | 1920  | 1907 | 1564 |
| 55°  | 1534 | 1514  | 1476 | 1437  | 1421 | 1371 |
| 65°  | 1034 | 1015  | 983  | 954   | 938  | 1023 |
| 75°  | 541  | 535   | 518  | 499   | 506  | 578  |
| 85°  | 132  | 129   | 126  | 116   | 113  | 147  |
| 90°  | 2    | 20    | 34   | 42    | 45   | 14   |
| 95°  | 109  | 54    | 66   | 74    | 72   | 129  |
| 105° | 511  | 562   | 103  | 121   | 128  | 546  |
| 115° | 967  | 996   | 1038 | 259   | 138  | 952  |
| 125° | 1367 | 1389  | 1421 | 1433  | 1438 | 1220 |
| 135° | 1692 | 1719  | 1734 | 1751  | 1748 | 1307 |
| 145° | 1963 | 1961  | 1990 | 2002  | 1993 | 1228 |
| 155° | 2161 | 2146  | 2167 | 2177  | 2163 | 996  |
| 165° | 2278 | 2268  | 2272 | 2284  | 2272 | 643  |
| 175° | 2330 | 2318  | 2321 | 2333  | 2316 | 222  |
| 180° | 2325 | 2325  | 2325 | 2325  | 2325 |      |



TEST NUMBER: P921143

CATALOG NUMBER: DFN2DIP-TR4F0-100D080US935-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3350.2 | 3350.2 | 3350.2 | 3350.2 | 3350.2 |
| 2.5°   | 3369.7 | 3353.6 | 3318.0 | 3350.2 | 3344.0 |
| 5°     | 3350.2 | 3337.6 | 3302.0 | 3327.7 | 3321.5 |
| 7.5°   | 3327.7 | 3308.5 | 3272.9 | 3298.9 | 3292.5 |
| 10°    | 3292.5 | 3269.9 | 3231.2 | 3256.9 | 3247.3 |
| 12.5°  | 3243.9 | 3224.8 | 3186.1 | 3202.2 | 3195.7 |
| 15°    | 3189.2 | 3170.1 | 3128.0 | 3141.0 | 3125.0 |
| 17.5°  | 3121.5 | 3102.4 | 3060.3 | 3076.4 | 3060.3 |
| 20°    | 3047.3 | 3028.2 | 2983.1 | 2992.7 | 2980.0 |
| 22.5°  | 2973.5 | 2944.5 | 2902.4 | 2902.4 | 2896.0 |
| 25°    | 2886.4 | 2860.8 | 2806.1 | 2812.2 | 2806.1 |
| 27.5°  | 2789.6 | 2767.1 | 2725.4 | 2715.8 | 2699.7 |
| 30°    | 2693.3 | 2667.3 | 2619.1 | 2609.5 | 2596.5 |
| 32.5°  | 2590.1 | 2570.9 | 2519.3 | 2499.8 | 2486.8 |
| 35°    | 2490.3 | 2458.1 | 2406.5 | 2387.0 | 2370.9 |
| 37.5°  | 2377.5 | 2348.4 | 2296.8 | 2274.2 | 2258.1 |
| 40°    | 2261.6 | 2235.6 | 2184.0 | 2155.3 | 2142.3 |
| 42.5°  | 2148.8 | 2122.8 | 2071.6 | 2039.1 | 2020.0 |
| 45°    | 2026.4 | 2003.9 | 1955.3 | 1920.1 | 1907.2 |
| 47.5°  | 1907.2 | 1884.6 | 1833.0 | 1797.4 | 1778.3 |
| 50°    | 1781.4 | 1765.3 | 1720.2 | 1675.1 | 1659.1 |
| 52.5°  | 1659.1 | 1636.5 | 1594.7 | 1559.3 | 1536.7 |
| 55°    | 1533.6 | 1514.2 | 1475.5 | 1436.8 | 1420.8 |
| 57.5°  | 1407.8 | 1391.7 | 1349.7 | 1311.1 | 1298.1 |
| 60°    | 1282.0 | 1269.4 | 1224.3 | 1188.7 | 1179.1 |
| 62.5°  | 1159.7 | 1137.1 | 1105.0 | 1072.9 | 1059.9 |
| 65°    | 1034.2 | 1014.8 | 982.7  | 953.6  | 937.5  |
| 67.5°  | 905.4  | 889.0  | 860.3  | 837.8  | 824.7  |
| 70°    | 786.1  | 773.1  | 744.1  | 721.5  | 708.9  |
| 72.5°  | 663.7  | 650.7  | 634.7  | 612.2  | 602.5  |
| 75°    | 541.1  | 534.9  | 518.5  | 499.4  | 505.8  |
| 77.5°  | 431.7  | 418.7  | 412.2  | 402.6  | 393.0  |
| 80°    | 322.3  | 318.9  | 312.4  | 302.8  | 296.4  |
| 82.5°  | 219.1  | 219.1  | 216.0  | 203.0  | 203.0  |
| 85°    | 131.9  | 128.9  | 125.8  | 115.9  | 112.8  |
| 87.5°  | 58.1   | 51.6   | 45.1   | 35.6   | 32.1   |
| 90°    | 1.6    | 20.1   | 33.6   | 42.1   | 45.4   |
| 92.5°  | 42.1   | 35.4   | 40.4   | 43.7   | 45.4   |
| 95°    | 109.3  | 53.7   | 65.5   | 74.1   | 72.3   |
| 97.5°  | 196.7  | 58.9   | 85.7   | 90.9   | 92.5   |
| 100°   | 297.8  | 67.3   | 95.9   | 109.3  | 112.6  |
| 102.5° | 408.7  | 405.4  | 99.3   | 117.6  | 122.9  |
| 105°   | 511.3  | 561.9  | 102.6  | 121.1  | 127.9  |
| 107.5° | 630.8  | 672.7  | 106.1  | 124.4  | 131.2  |
| 110°   | 745.3  | 780.4  | 294.5  | 126.2  | 132.9  |



TEST NUMBER: P921143

CATALOG NUMBER: DFN2DIP-TR4F0-100D080US935-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 852.9  | 883.0  | 854.5  | 129.4  | 134.7  |
| 115°   | 967.2  | 995.7  | 1037.8 | 259.1  | 138.0  |
| 117.5° | 1066.4 | 1100.0 | 1128.8 | 888.0  | 447.5  |
| 120°   | 1177.5 | 1202.6 | 1233.0 | 1253.2 | 1026.1 |
| 122.5° | 1271.5 | 1298.6 | 1332.3 | 1342.3 | 1344.1 |
| 125°   | 1367.4 | 1389.4 | 1421.3 | 1433.1 | 1438.1 |
| 127.5° | 1454.9 | 1478.5 | 1503.9 | 1520.6 | 1522.2 |
| 130°   | 1537.4 | 1564.3 | 1582.8 | 1601.4 | 1599.7 |
| 132.5° | 1621.5 | 1643.5 | 1661.9 | 1677.1 | 1675.4 |
| 135°   | 1692.2 | 1719.2 | 1734.1 | 1751.2 | 1747.7 |
| 137.5° | 1766.2 | 1786.3 | 1803.3 | 1820.1 | 1815.1 |
| 140°   | 1838.4 | 1852.0 | 1870.4 | 1885.6 | 1877.1 |
| 142.5° | 1899.2 | 1910.9 | 1932.7 | 1946.1 | 1937.7 |
| 145°   | 1963.1 | 1961.3 | 1989.9 | 2001.6 | 1993.2 |
| 147.5° | 2018.4 | 2013.4 | 2041.9 | 2050.4 | 2043.8 |
| 150°   | 2072.3 | 2060.5 | 2087.5 | 2097.5 | 2089.1 |
| 152.5° | 2117.7 | 2104.3 | 2129.4 | 2139.7 | 2127.9 |
| 155°   | 2161.4 | 2146.5 | 2166.6 | 2176.6 | 2163.3 |
| 157.5° | 2196.7 | 2183.4 | 2198.6 | 2210.4 | 2196.7 |
| 160°   | 2227.1 | 2217.0 | 2227.1 | 2237.1 | 2225.3 |
| 162.5° | 2253.9 | 2243.9 | 2252.3 | 2264.1 | 2248.9 |
| 165°   | 2277.5 | 2267.5 | 2272.5 | 2284.2 | 2272.5 |
| 167.5° | 2296.0 | 2285.9 | 2291.0 | 2302.8 | 2287.7 |
| 170°   | 2311.3 | 2301.0 | 2304.5 | 2316.3 | 2301.0 |
| 172.5° | 2321.3 | 2311.3 | 2314.6 | 2326.4 | 2311.3 |
| 175°   | 2329.6 | 2317.8 | 2321.3 | 2333.0 | 2316.3 |
| 177.5° | 2333.0 | 2321.3 | 2323.0 | 2334.8 | 2319.6 |
| 180°   | 2324.6 | 2324.6 | 2324.6 | 2324.6 | 2324.6 |



TEST NUMBER: P921143  
 CATALOG NUMBER: DFN2DIP-TR4F0-100D080US935-FLLONL

**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 11.17            | 12.08 | 12.08 | 13.01 | 14.20 | 10.74          | 11.65 | 11.64 | 12.58 | 13.77 |
|                 | 3H   | 12.83            | 13.65 | 13.75 | 14.59 | 15.80 | 12.36          | 13.18 | 13.28 | 14.12 | 15.33 |
|                 | 4H   | 13.42            | 14.20 | 14.36 | 15.14 | 16.36 | 12.95          | 13.72 | 13.88 | 14.67 | 15.89 |
|                 | 6H   | 13.82            | 14.54 | 14.77 | 15.49 | 16.72 | 13.35          | 14.06 | 14.30 | 15.01 | 16.25 |
|                 | 8H   | 13.93            | 14.61 | 14.88 | 15.58 | 16.81 | 13.46          | 14.14 | 14.41 | 15.10 | 16.34 |
|                 | 12H  | 13.98            | 14.63 | 14.94 | 15.59 | 16.85 | 13.50          | 14.15 | 14.46 | 15.11 | 16.37 |
| 4H              | 2H   | 11.64            | 12.41 | 12.58 | 13.35 | 14.58 | 11.29          | 12.07 | 12.23 | 13.01 | 14.23 |
|                 | 3H   | 13.51            | 14.15 | 14.46 | 15.13 | 16.36 | 13.11          | 13.76 | 14.06 | 14.73 | 15.97 |
|                 | 4H   | 14.22            | 14.81 | 15.18 | 15.78 | 17.04 | 13.82          | 14.41 | 14.78 | 15.38 | 16.64 |
|                 | 6H   | 14.74            | 15.25 | 15.71 | 16.24 | 17.50 | 14.33          | 14.84 | 15.30 | 15.83 | 17.09 |
|                 | 8H   | 14.89            | 15.37 | 15.87 | 16.35 | 17.63 | 14.48          | 14.96 | 15.45 | 15.94 | 17.21 |
|                 | 12H  | 14.97            | 15.40 | 15.96 | 16.40 | 17.68 | 14.55          | 14.98 | 15.54 | 15.98 | 17.26 |
| 8H              | 4H   | 14.42            | 14.90 | 15.40 | 15.88 | 17.16 | 14.06          | 14.54 | 15.04 | 15.52 | 16.80 |
|                 | 6H   | 15.06            | 15.45 | 16.06 | 16.48 | 17.75 | 14.70          | 15.09 | 15.70 | 16.11 | 17.39 |
|                 | 8H   | 15.28            | 15.63 | 16.29 | 16.64 | 17.93 | 14.91          | 15.26 | 15.92 | 16.27 | 17.56 |
|                 | 12H  | 15.41            | 15.72 | 16.43 | 16.73 | 18.06 | 15.03          | 15.33 | 16.04 | 16.34 | 17.68 |
| 12H             | 4H   | 14.41            | 14.84 | 15.41 | 15.84 | 17.12 | 14.06          | 14.49 | 15.05 | 15.49 | 16.77 |
|                 | 6H   | 15.09            | 15.44 | 16.10 | 16.45 | 17.74 | 14.74          | 15.08 | 15.75 | 16.10 | 17.39 |
|                 | 8H   | 15.33            | 15.64 | 16.34 | 16.65 | 17.98 | 14.98          | 15.28 | 15.99 | 16.29 | 17.63 |